



UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY, DOCKET NO.
08/770,381	12/03/96	KESSLER	74508NAE

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LM01/0724

EXAMINER
WILSON, J

ART UNIT	PAPER NUMBER
2712	

DATE MAILED: 07/24/98

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
08/770,381

Applicant(s)
Kessler et al.

Examiner
Jacqueline Wilson

Group Art Unit
2712



☒ Responsive to communication(s) filed on Dec 3, 1996

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-14 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-5 and 7-14 is/are rejected.

☒ Claim(s) 6 is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2 and 3

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

Page 2, lines 27-28, "this axis. The so" should be changed to --this axis, the so--;

Page 9, line 27, "lithium" should be changed to --Lithium--.

Appropriate correction is required.

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: Lithium tantalate, as presented in Claim 4, is not disclosed in the specification.

Claim Objections

3. Claim 1 is objected to because of the following informalities:

Line 9, "geater" should be changed to --greater--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kessler (U.S. 5,684,293).

Regarding Claim 3, Kessler '293 teaches an imaging apparatus for generating an image signal from incident light with higher spatial frequencies of the incident light limited to reduce undersampling artifacts comprising an image sensor for generating the image signal from an array of photosites (Fig. 1, element 18), and an optical section having a birefringent uniaxial crystal optical filter interposed in a path of the incident light to produce a blurred image on the photosites (col. 3, lines 57-64; col. 4 lines 40-49). Kessler '293 fails to disclose the birefringent uniaxial crystal optical filter is calcite. However, it is notoriously well known in the art to use calcite as a crystal optical filter material for the purpose of selectively decreasing the resolution of the frequency element of the image, and to change the thickness of the plate that is used. (Official Notice)

6. Claims 1, 2, 7, 9, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kessler (U.S. 5,684,293) and Fukushima (U.S. 5,579,420).

Regarding Claim 1 and 2, Kessler '293 teaches an imaging apparatus for generating an

signal from incident light with higher spatial frequencies of the incident light limited to

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crystal optical filter interposed in a path of the incident light to produce a blurred image on the photosites (col. 3, lines 57-64; col. 4 lines 40-49). However, Kessler '293 fails to disclose the birefringent uniaxial crystal optical filter birefringence is greater than 0.05.

Fukushima '420 teaches an optical filter formed of birefringent crystal such as lithium niobate (col. 5, lines 1-5). Lithium niobate has a birefringent value of 0.09, which is greater than 0.05. The strong wavelength dependent characteristic of the polarization conversion resulting from the birefringent characteristic of lithium niobate makes the device useful in applications such as multiplexing and/or demultiplexing. Therefore, it would have been obvious to one of ordinary skill in the art to have the birefringent crystal optical filter to be made of lithium niobate which has a birefringence greater than 0.05.

Regarding Claim 7, Kessler '293 fails to disclose the optical filter is comprise of a first plate of lithium niobate. However, Fukushima '420 teaches that the first, second and third birefringent elements are formed of a birefringent crystal such as lithium niobate (col. 5, lines 1-5). The strong wavelength dependent characteristic of the polarization conversion resulting from the birefringent characteristic of lithium niobate makes the device useful in applications such as multiplexing and/or demultiplexing. Therefore, it would have been obvious to one of ordinary skill in the art to have the first plate of lithium niobate to diffract the path of the incident light.

Regarding Claim 9, Kessler '293 does not specifically disclose a thickness of the first plate is not equal to a thickness of the second plate. However, Fukushima '420 teaches the filter units are made different from each other (col. 11, lines 41-60). It would be advantageous to have the

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first filter plate not to be equal to a thickness of the second plate to prevent the undesired beams once deviated from the optical paths may be returned to the optical paths. Therefore, it would have been obvious to one of ordinary skill in the art to have the first plate not to equal the second plate in the imaging apparatus.

Regarding Claim 10, Fukushima '420 teaches the four spot rays (See Fig. 5, elements 46-49).

Claim 11, Kessler '293 teaches the optical section includes a lens (element 16) and the optical filter is positioned between the lens and the photosites for blurring the image on the photosites (See Fig. 1).

Claim 12 is analyzed and discussed with respect to Claim 10 and 2. (See rejection of Claims 10 and 2 above.)

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kessler (U.S. 5,684,293) and Fukushima et al. (U.S. 5,646,399).

Kessler '293 teaches an imaging apparatus for generating an image signal from incident light with higher spatial frequencies of the incident light limited to reduce undersampling artifacts comprising an image sensor for generating the image signal from an array of photosites (Fig. 1, element 18), and an optical section having a birefringent uniaxial crystal optical filter interposed in a path of the incident light to produce a blurred image on the photosites (col. 3, lines 57-64; col. 4 lines 40-49). However, Kessler '293 fails to disclose the birefringent uniaxial crystal optical filter is lithium tantalate.

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Fukushima et al. '399 teaches that lithium tantalate may be used as an optical birefringent crystal element (col. 8, lines 11-15) replacing the lithium niobate. Like lithium niobate, Fukushima et al. '399 teaches that lithium tantalate may also be used to improve the mass productivity. Lithium tantalate may also make the device useful in applications such as multiplexing and/or demultiplexing. Therefore, it would have been obvious to one of ordinary skill in the art to use lithium tantalate as a birefringent uniaxial crystal optical filter.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kessler '293 and Fukushima '420 as applied to claim 1 above, and further in view of Takatori et al. (U.S. 5,715,085).

Regarding Claim 5, neither Kessler '293 nor Fukushima '420 teaches an angle between an optical axis of the optical filter and a line normal to a filter facets is 37.85° . However Takatori et al. '085 teaches that the angle of the optical filter with respect to the incident plane is set smaller than an angle of 45° (col. 1, lines 65-68). Takatori et al. '085 teaches that due to the fact that an angle of inclination of the optical axis of the optical filter with respect to the incident plane is set about 35° , which includes the angle 37.85° , even when the angle of incidence of the incident light is great, variations of the separation width between an ordinary ray and an extraordinary ray are not great, that is, the characteristic of the optical filter does not vary according to the angles of incidence of the incident light (col. 2, lines 1-9). When an angle of incidence of an incident light ray into the incident plane is large, the separation width of the ray varies greatly (col. 1, lines 40-49). It would be advantageous to have the angle set below 45° and about 35° to prevent the

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generation of a false signal due to the width of the ray. Therefore, it would have been obvious to one of ordinary skill in the art wherein an angle between an optical axis of the optical filter and a line normal to a filter facets is below 45° and about 35° , which includes the angle 37.85° .

Claim 14 is analyzed and discussed with respect to Claims 1 and 5. (See rejection of Claims 1 and 5 above.)

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kessler (U.S. 5,684,293), Fukushima (U.S. 5,579,420), and in further view of Penunuri (U.S. 5,777,419).

Neither Kessler '293 nor Fukushima '420 teaches the optical filter is cut from a boule so that a crystal axis is at 37.85° to the boule axis of symmetry. However, Penunuri '419 teaches that the filter is cut from a boule so that a crystal axis is at a range of degrees to the boule axis of symmetry (See col. 5). Penunuri '419 discloses a range of cut angle values of material such as lithium niobate has minimum insertion losses for open and short circuit cases (col. 2, lines 10-20). This would be advantageous so that the insertion losses of the crystal filter would be kept to a minimum and no false signals would be generated. Therefore, it would have been obvious to one of ordinary skill in the art to have the optical filter being cut from a boule so that a crystal axis is at 37.85° to the boule axis of symmetry.

10. Claims 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kessler '293 and Fukushima '420, and further in view of Watanabe et al. (U.S. 3,784,734).

Regarding Claim 8, neither Kessler '293 nor Fukushima '420 teaches a thickness of the first plate is equal to a thickness of the second plate.

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However, Watanabe et al. '734 discloses that the sheets (Fig. 20, elements 34a and 34b) are identical to each other (col. 10, lines 67-68). Watanabe et al. '734 teaches the thickness of the sheets (element 34a and 34b) creates a rhomboidal pattern of the four spot to be of 45° (col. 11, lines 54-62; see Fig. 22). By creating the thickness of the first plate to equal to a thickness of the second plate having the rhomboidal pattern of the rays, aids in producing color video signals which do not cause any moire in the reproduced picture. Therefore, it would have been obvious to one of ordinary skill in the art to have the thicknesses of the first and the second plate to be of equal value.

Claim 13 is analyzed and discussed with respect to Claim 8. (See rejection of Claim 8 above.)

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sasaki et al. (U.S. 5,477,381)

Takasugi (U.S. 5,471,343)

Shiraishi (U.S. 5,452,129)

Sato et al. (U.S. 4,626,897)

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12. Any inquiries concerning this communication from the examiner should be directed to **Jacqueline Wilson** whose telephone number is (703) 308-5080. The examiner can normally be reached Monday-Friday from 9:00 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Wendy Garber**, can be reached at (703) 305-4929. The fax number for this group is (703) 308-5399.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

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or Faxed to:

(703) 308-9051, (for formal communication intended for entry)

or:


(703) 308-5399, (for informal or draft communications, please label

"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, V.A., Sixth Floor (Receptionist).

JBW 

July 17, 1998


WENDY GARBER
PRIMARY EXAMINER
Supervisory